

REMARKS

Applicants thank the Examiner for the very thorough consideration given the present application. Claims 1-18 and 20 are currently pending in this application. Claim 19 has been cancelled. No new matter has been added by way of the present amendment. The amendment to claims 1 and 6 is supported by previously presented claim 19, now cancelled. Accordingly, no new matter has been added.

In view of the amendments and remarks herein, Applicants respectfully request that the Examiner withdraw all outstanding rejections and allow the currently pending claims.

Issues under 35 U.S.C. § 103(a)**Claims 1, 2, 5-7 and 10**

The Examiner maintains the rejection of claims 1, 2, 5-7 and 10 under 35 U.S.C. § 103(a) as being unpatentable over Vanlerberghe et al. (U.S. 4,371,517) (hereinafter Vanlerberghe '517). Applicants respectfully traverse.

In the Office Action issued on March 13, 2007, the Examiner asserted that Vanlerberghe '517 teaches dyeing textiles by applying a dye, a homopolymer of acrylic or methacrylic acid, alkali metal salts and benzyl alcohol. The Examiner acknowledged that Vanlerberghe '517 does not teach all the claimed embodiments in a single example, but asserts that it would be obvious to one skilled in the art to select these components "absent unexpected results". In response to our arguments of June 13, 2007, the Examiner asserts that "applicant defines adhesion curing in the instant specification as immersion in a composition followed by drying (paragraph 0021)".

The Examiner further asserts that “Vanlerberghe et al. teach applying polymers of acrylic or polyacrylates which contain carboxylic groups to textiles followed by drying in an oven”.

Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness. To establish a *prima facie* case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Additionally, there must be a reason why one of ordinary skill in the art would modify the reference or combine reference teachings to obtain the invention. A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. *KSR Int'l Co. v Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007). There must be a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. *Id.* The Supreme Court of the United States has recently held that the "teaching, suggestion, motivation test" is a valid test for obviousness, albeit one which cannot be too rigidly applied. *Id.* Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *Id.*

According to the method of the present invention, a cellulose fiber is colored **without the use of a dye** (emphasis added). As acknowledged by the Examiner, Vanlerberghe '517 teaches dyeing textiles **by applying a dye** (emphasis added). Thus, it is evident that Vanlerberghe '517 teaches away from the present invention.

Because cellulose itself cannot be dyed, a carboxylic group and/or a sulfonic acid group is introduced in the present invention. Further, the cellulose fiber having a carboxylic or sulfonic

acid introduced therein is treated with an aromatic derivative having one or more hydroxyl groups and a metal salt. Vanlerberghe '517 does not teach or suggest such a method.

Furthermore, Applicants submit that the Examiner is improperly "picking and choosing" from among different portions of the disclosure of Vanlerberghe '517 in an attempt to arrive at the present invention. For instance, the Examiner asserts that Vanlerberghe '517 discloses "adhesion curing", as it discloses applying polymers containing carboxylic groups and drying in an oven. Applicants respectfully disagree.

Initially, Applicants note that the term "adhesion curing" in claims 2 and 7 has been explicitly defined at paragraph [0018], as follows:

[0018] The "adhesion curing" means a treatment in which a cellulose fiber is immersed in a solution containing a substance having two or more carboxyl groups in the molecule (hereinafter, referred to as "acid-treating solution") and the substance having a carboxyl group is adhered to the cellulose fiber, and then the cellulose fiber is dried and heated to allow at least one carboxyl group in the molecule to bind to the cellulose fiber via an ester bond.

Example 72 of Vanlerberghe '517, cited by the Examiner as teaching "adhesion curing", is directed to a composition that provides "greater stiffness" to a woolen fabric (*see* col. 17, lines 65-68 and col. 18, lines 1-25). Vanlerberghe '517 does not teach or suggest that the woolen fabric of Example 72 is immersed in a solution containing a substance having two or more carboxyl groups in the molecule, wherein the substance having a carboxyl group adheres to the cellulose fiber, and subsequently drying and heating the cellulose fiber to allow at least one carboxyl group in the molecule to bind to the cellulose fiber via an ester bond. The Examiner's

citation of col. 4, lines 15-20 of Vanlerberghe '517 is not relevant to Example 72 or "adhesion curing". The cited passage discloses examples of homopolymers or copolymers derived from acrylic or methacrylic acid containing a certain recurring unit. Example 72 does not employ these homopolymers or copolymers. Rather, Example 72 employs MERQUAT 100, which is a quaternary ammonium polymer, and not a homopolymer or copolymer derived from acrylic or methacrylic acid (*see* Vanlerberghe '517 at col. 4, lines 4-12). Clearly, this reference does not teach "adhesion curing" as presently defined and claimed, as it does not teach a cellulose fiber being immersed in a solution containing a substance having two or more carboxyl groups in the molecule, wherein the cellulose fiber is dried and heated to allow at least one carboxyl group in the molecule to bind to the cellulose fiber via an ester bond.

Applicants submit that Vanlerberghe '517 merely discloses a composition comprising an anionic polymer, a cationic polymer, an alkali metal salt and a non-ionic surfactant, which is effective as a shampoo (*see* Examples 1-64), or that may be used to impart "stiffness" to a piece of fabric (*see* Examples 65-82). Vanlerberghe '517 does not teach or suggest a method of coloring a cellulose fiber or producing a colored cellulose fiber, wherein a carboxylic or sulfonic acid group is introduced into a cellulose fiber. Furthermore, Vanlerberghe '517 does not teach or suggest an acid-modified cellulose fiber that is subsequently treated with an aromatic derivative and a metal salt. Example 72, cited by the Examiner, does not in any way teach or suggest a subsequent treatment of an acid-modified cellulose fiber.

For purposes of illustration and not limitation, the Examiner's attention is directed to Applicants' Specification at pages 16-19. As evidenced by Applicants' examples and comparative examples, the fibers comprising a carboxylic or sulfonic acid group and treated with

an aromatic derivative and a metal salt exhibit excellent color development and superior fastness to light (*see* Table 1 at page 19). In contrast, fibers into which carboxylic or sulfonic acid groups are not introduced or treatment with an aromatic derivative and a metal salt is not conducted exhibit improper color development and inferior fastness to light.

Clearly, Vanlerberghe '517 is not directed to a coloring technique for cellulose fibers. This reference is merely directed to shampoos. The polymers disclosed are not fixed to any fiber. Furthermore, this reference fails to teach or suggest coloring a fiber without the use of a dye.

Accordingly, Applicants respectfully submit that the present invention is not obvious over Vanlerberghe '517. Reconsideration and withdrawal of this rejection are thus respectfully requested.

Claims 3, 4, 8 and 9

Claims 3, 4, 8 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Vanlerberghe '517 in view of Moeller et al. (WO 01/34106 and its U.S. equivalent, U.S. 6,790,239) (hereinafter Moeller '239). Applicants respectfully traverse.

The Examiner acknowledges that Vanlerberghe '517 does not teach or suggest iron salts or hydroxybenzaldehydes, and relies on the teachings of Moeller '239 to overcome these deficiencies.

Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness. As previously discussed, Vanlerberghe '517 fails to teach or suggest a method of coloring a cellulose fiber or producing a colored cellulose fiber, wherein a carboxylic or sulfonic acid group is introduced into a cellulose fiber, wherein the acid-modified cellulose

fiber is subsequently treated with an aromatic derivative and a metal salt, and wherein the cellulose fiber is colored without the use of a dye. Moeller '239 fails to cure these deficiencies.

Moeller '239 discloses a coloring composition and method of coloring keratin-containing fibers, particularly human hair. The composition disclosed by Moeller '239 comprises an aromatic aldehyde or ketone, and a CH-active compound. Moeller '239 does not teach or suggest a method of coloring a cellulose fiber or producing a colored cellulose fiber, wherein a carboxylic or sulfonic acid group is introduced into a cellulose fiber, and wherein the cellulose fiber is colored without the use of a dye. The invention of Moeller '239 is applied to human hair. Polyacrylic acid is used as a surfactant, and is not fixed to a fiber.

Applicants respectfully submit that the cited references fail to teach or suggest each and every limitation of the present invention, and thus fail to render it obvious. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

Claims 3, 4, 8 and 9

Claims 3, 4, 8 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Vanlerberghe '517 in view of Moeller et al. (WO 99/18916 and its U.S. equivalent, U.S. 6,371,993) (hereinafter Moeller '993). Applicants respectfully traverse.

Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness. As previously discussed, Vanlerberghe '517 fails to teach or suggest a method of coloring a cellulose fiber or producing a colored cellulose fiber, wherein a carboxylic or sulfonic acid group is introduced into a cellulose fiber, wherein the acid-modified cellulose

fiber is subsequently treated with an aromatic derivative and a metal salt, and wherein the fiber is colored without the use of a dye. Moeller '993 fails to cure these deficiencies.

Applicants submit that Moeller '993 does not teach or suggest a method for coloring a cellulose fiber without the use of a dye, said method comprising the steps of introducing a carboxylic or sulfonic acid group into said cellulose fiber and treating the cellulose fiber with an aromatic derivative.

Further, Applicants note that all exemplary embodiments disclosed by Moeller '993 are directed to coloring of human hair. Moeller '993 teaches the preparation of a solution with complicated components and the use of said solution for coloring human hair. Moeller '993 does not teach or suggest the introduction of carboxylic or sulfonic groups into a fiber. Clearly, Moeller '993 fails to teach or suggest coloring of a cellulose fiber as presently claimed.

Applicants respectfully submit that the cited references fail to teach or suggest each and every limitation of the present invention, and thus fail to render it obvious. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

Claims 1-10, 12 and 14-18

Claims 1-10, 12 and 14-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Pai (U.S. 5,516,338) (hereinafter Pai '338) in view of Collier et al. (U.S. 2005/02106600) (hereinafter Collier '600). Applicants respectfully traverse.

Applicants submit that the Examiner has failed to establish a *prima facie* case of obviousness. Pai '338 does not teach or suggest every limitation of the present invention. Pai '338 is directed to a water-soluble dye and a method of dyeing a textile with a composition

comprising a water-soluble titanium salt, a tannin substance and water. Natural myrobalan extract is used as a natural dye for coloring. Carboxylic groups or sulfonic groups are not introduced.

Clearly, Pai '338 does not teach or suggest a method of coloring a cellulose fiber or producing a colored cellulose fiber, wherein a carboxylic or sulfonic acid group is introduced into a cellulose fiber and the acid-modified cellulose fiber is subsequently treated with an aromatic derivative and a metal salt, and wherein the fiber is colored without the use of a dye. Collier '600 fails to cure these deficiencies.

Collier '600 is directed to compositions and methods for imparting stain resistance, liquid repellency and enhanced antimicrobial activity. Collier '600 does not teach or suggest any coloring method whatsoever, much less a method for coloring a cellulose fiber by introducing a carboxylic or sulfonic acid.

Applicants respectfully submit that the cited references fail to teach or suggest each and every limitation of the present invention, and thus fail to render it obvious. Reconsideration and withdrawal of this rejection are respectfully requested.

Claims 1-10, 12 and 14-18

Claims 1-10, 12 and 14-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Pai '338 in view of Sargent et al., which the Examiner identifies as "US 2005/02106600". Applicants respectfully traverse.

Initially, Applicants note that the citation of “US 2005/02106600” appears to be a typographical error. The following comments are directed to Sargent et al., U.S. 5,316,850 (hereinafter Sargent ‘850).

Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness. As previously discussed, Pai ‘338 does not teach or suggest a method of coloring a cellulose fiber or producing a colored cellulose fiber, wherein a carboxylic or sulfonic acid group is introduced into a cellulose fiber and the acid-modified cellulose fiber is subsequently treated with an aromatic derivative and a metal salt, and wherein the fiber is colored without the use of a dye. Sargent ‘850 fails to cure these deficiencies.

Sargent ‘850 is directed to methods to impart permanent stain resistance to polyamide or cellulosic fibers by covalently binding a stain resistant composition to a linking compound that has been covalently attached to the fiber. Sargent ‘850 teaches that the composition of the invention is particularly useful in the preparation of commercial grade carpets for high traffic areas.

Sargent ‘850 does not teach or suggest any coloring methods whatsoever, much less a method for coloring a cellulose fiber or producing a colored cellulose fiber, wherein a carboxylic or sulfonic acid group is introduced into a cellulose fiber. Additionally, Sargent ‘450 does not teach or suggest a method wherein an acid-modified cellulose fiber is subsequently treated with an aromatic derivative and a metal salt.

Clearly, the cited references fail to teach or suggest every limitation of the present invention. Accordingly, this rejection is improper and should be withdrawn.

Reconsideration and withdrawal of this rejection are respectfully requested.

Claims 1-3, 5-8 and 10-20

Claims 1-3, 5-8 and 10-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sanders et al. (U.S. 5,212,040) (hereinafter Sanders '040). Applicants respectfully traverse.

Applicants submit that the Examiner has failed to establish a *prima facie* case of obviousness. Sanders '040 is directed to a process that enables the use of carbonless papers in electrostatic imaging apparatuses while preventing premature rupture of the color microcapsules. The process comprises incorporating a recording sheet into an electrostatic imaging apparatus, wherein the recording sheet comprises a support on a surface of which are located microcapsules.

Sanders '040 does not teach or suggest any coloring method whatsoever, much less a method for coloring a cellulose fiber or producing a colored cellulose fiber, wherein a carboxylic or sulfonic acid group is introduced into a cellulose fiber and the acid-modified cellulose fiber is subsequently treated with an aromatic derivative and a metal salt.

Because the cited reference fails to teach every limitation of the present invention, reconsideration and withdrawal of the present rejection are respectfully requested.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the examiner reconsider all presently outstanding rejections and objections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding office action and, as such, the present application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Marc S. Weiner, Reg. No. 32,181 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

Dated:

JAN 11 2008

Respectfully submitted,

By *maan* (Reg No 40,069)

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